

### **REMARKS**

The remarks presented herein attend to all issues in the pending office action of September 21, 2007. Claims 2-14 and 16-17 are pending.

#### **Amendments to the Claims**

Claim 10 has been rewritten to now be in independent form. No other amendments to the claims are presented herein.

#### **Election/Restriction**

With respect to the finality of the previous restriction requirement, Applicant respectfully repeats the previous traversal, and further traverses the requirement being made final in the outstanding Office Action. The Examiner appears to have misread the claims.

The Examiner asserts that the previous traversal was not persuasive because “the amended claims directed to a system for generating FIR laser radiation comprise a grating element which does not have a V-groove and vertex to the flat base, as the claims directed to the grating element require.” (Page 2, first paragraph). Independent claim 2 of the present invention, for example, does not recite or require either of a “V-groove and vertex to the flat base,” as erroneously asserted in the Office Action. Such elements first appear in *claim 3*, which depends from independent claim 2. Accordingly, Applicant respectfully requests that the Examiner reconsider and withdraw the restriction requirement in light of this clear error. All of the pending claims will be patentable if and when independent claim 2 – which is generic to each group of claims – is found patentable.

#### **Claim Rejections – 35 U.S.C. 103**

##### *Claims 2-5 and 7-10*

Claims 2-5 and 7-10 stand rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,852,956 (hereinafter, “Kramer”) in view of U.S. Patent No. 5,263,043 (hereinafter, “Walsh”). Applicant respectfully traverses this rejection because a *prima facie* case of obviousness has not been established. Neither of the references, whether taken alone or in combination, discloses or suggests all of the recited features and elements of the pending claims. Additionally, neither reference is even drawn toward a grating horn.

Section 2143.03 of the MPEP requires that the Examiner, when attempting to establish a *prima facie* case of obviousness, must first be able to demonstrate where the prior art discloses or suggests each and every element and feature of the claimed invention. In the present case, however, this requirement has not been met. The rejection fails to cite to any teaching or suggestion from either reference, for example, that indicates a pair of grating elements being oriented in phase, as featured (among other things) in independent claim 2 of the present Application.

The rejection asserts (last two lines of page 2 of the outstanding Office Action) that Kramer allegedly describes or suggests phase orientation of grating elements at col. 11, lines 54-61. After reviewing this portion of cited text again though, the Examiner should easily see that phase orientation is nowhere mentioned, or even suggested. Only the *structural* orientation of Kramer's grating surfaces is described, but not the phase. This distinction is not insignificant.

The orientation of the phase between the two grating elements of the present Application is significant because different phases can produce significantly distinct emission patterns. Although a phase difference of zero may produce a strong interaction with, and emission from, an electron beam, Applicant also contemplates how non-zero phase differences may also yield useful advantages. Kramer remains silent regarding any of these material factors of phase orientation. Similarly, Walsh is cited merely for its description of using gratings with radiation in the FIR (Terahertz) range. Walsh is equally silent regarding phase orientation between the grating elements themselves. Accordingly, the asserted *prima facie* case of obviousness is deficient on its face for at least these reasons, and should be withdrawn with respect to at least independent claim 2.

The rejection should also be withdrawn with respect to claims 3-5 and 7-9 because all of these claims depend either directly or indirectly from independent claim 2, and thus include all of the recited features of the base claim. All of the arguments presented above, therefore, are equally applicable to these dependent claims.

With respect to claim 10 in particular, the arguments made above are also equally applicable to this claim because claim 10 incorporates at least all of the subject matter of independent claim 2, from which claim 10 originally depended indirectly. The rejection of

claim 10 should also be withdrawn, however, because the asserted case of obviousness is even further deficient on its face as applied to claim 10.

Claim 10 features, among other things, that each of the grating elements includes both a triangle component and a rectangular component, and that each of these components are ruled parallel to the flat base. The rejection cites only Walsh, and not Kramer, for allegedly disclosing or suggesting such features. Walsh, however, shows nothing of the sort, and the Examiner appears to have clearly misinterpreted both the Walsh reference, as well as the plain language of claim 10.

For example, the rejection cites only col. 11, lines 7-11, and element no. 16 of Fig. 9A from Walsh as somehow representing both a “triangle component and a rectangle component” to the grating elements, and also that each grating element is ruled within each of these triangle and rectangular components. In making such an assertion though, the rejection has clearly confused the rulings in the grating elements with the grating elements themselves.

Element 16 of Walsh’s Fig. 9A clearly shows that the only “triangle” component to the device is the shape of the *ruling* in the grating element. Looking at Fig. 6E of the present Application, on the other hand, the Examiner can see both a triangle component and a rectangle component in the pair of grating elements themselves, as opposed to merely the shape of the rulings in the grating element. Accordingly, the rejection of claim 10 is further deficient on its face for at least these reasons, and should be withdrawn.

Furthermore, even if the rejection were to maintain the unreasonable interpretation that triangle shape to the rulings shown in Walsh’s Fig. 9A still could read upon the “triangle component” of claim 10, the rejection still fails to cite to any disclosure or suggestion that any ruling in Walsh’s element 16 can have **both** a triangle **and** a rectangular component. Claim 10 requires both components to each of the grating elements, and therefore the rejection is still further deficient on its face for at least these reasons as well.

Moreover, the rejection still further fails to establish how even element 16 from Fig. 9A of Walsh could be ruled “in” the triangle component when the “triangle component” asserted in the rejection is the ruling itself. The Examiner would have to be able to show where Walsh (or Kramer) somehow disclosed or suggested a second ruling in the first or, a “ruling-within-the-ruling,” to read upon the plain language of claim 10. Claim 10 requires

both the triangle component, and a ruling *in* the triangle component. Additionally, considering that both a rectangular component and a ruling in the rectangular component are also both required in claim 10, the deficiencies in the *prima facie* rejection become all that much more apparent.

Nevertheless, even could a proper *prima facie* case of obviousness be established based on the proposed combination of Kramer and Walsh, the rejection should still have to be withdrawn on rebuttal because neither of the references is even drawn toward a grating horn.

The device of Kramer, in particular, is drawn toward the purpose of *reducing distortion* in light scanning applications, which is entirely different from some of the main purposes of a grating horn, such as light generation with an electron beam, conversion of incident light into slow-waves bound to the grating surface, magnification of signals, and/or light condensation. Walsh similarly fails to teach or suggest such purposes or abilities, whether considered alone, or in combination with Kramer. A grating horn is simply very different from the devices shown in either cited reference, and therefore the cited portions of these references are not applicable or analogous to the claims of the present Application. There is no disclosure or suggestion in either reference to modify either to perform as a grating horn, which the Examiner would be required to demonstrate under at least the requirements of Section 2143.01 of the MPEP.

Thus, in rebuttal to the asserted *prima facie* case of obviousness, the rejection would still be overcome for at least these reasons. Accordingly, withdrawal is again respectfully requested for at least these reasons.

#### *Claim 6*

Claim 6 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Kramer in view of Walsh, and further in view of U.S. Patent No. 4,972,075 (hereinafter, "Hamada"). Applicant respectfully traverses this rejection for at least the reasons discussed above (claim 6 depends indirectly from independent claim 2), and as follows. A *prima facie* case of obviousness has not been established because no disclosure or suggestion from the references themselves has been cited to indicate how or why one skilled in the art would be motivated to combine all three references as proposed.

Section 2143.01 of the MPEP additionally requires that the Examiner, when attempting to combine the teachings of two or more references, must be able to cite some objective evidence on the record that establishes how the proposed combination itself, as opposed to merely the picking and choosing of the various elements therein, is obvious. Where no “well-known principle in art” is cited, the motivation for the combination must be disclosed or suggested within the references themselves. In the present case, however, this requirement has not been met either.

Assuming, for the purposes of this discussion only, that the rejection correctly cited col. 6, lines 35-39 of Hamada as describing or suggesting the relevant features of claim 6 (which Applicant does not concede), nothing in this very small portion of the reference provides any direction to one of ordinary skill in the art for how or why to modify Kramer and Walsh to include these particular features of Hamada, and in a way that would yield a workable device in the modification process. Merely citing where a single reference describes one feature will satisfy only the requirements of Section 2143.03 (with respect to that feature only), but not Section 2143.01.

Additionally, the only rationale presented to justify the combination is the single conclusory statement from the Examiner that such a *combination* would “give a sharp moiré pattern.” The rejection cites to nothing, however, that justifies this conclusory statement with respect to the combination of all three references. Although the Examiner is deemed to have knowledge in the particular field of art, the Examiner’s personal opinion may not form the basis of an obviousness rejection. See In re Lee, 277 F.3d 1338 (Fed. Cir. 2002). Accordingly, the rejection of claim 6 should be withdrawn for at least these reasons as well.

### CONCLUSION

In view of the foregoing Amendments and Remarks, Applicant submits that all of the issues arising from the Office Action dated September 21, 2007 have been addressed. If the Examiner considers that any issue remains outstanding, or if questions arise regarding this Response, the Examiner is invited to contact the undersigned attorney.

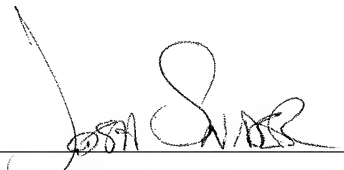
*Atty. Docket No.: 434817*

No fees are believed due; however, should any fees be deemed necessary in connection with this Amendment and Response, the Commissioner is hereby authorized to charge deposit account 12-0600.

Respectfully submitted,

Date: December 21, 2007

By: \_\_\_\_\_

  
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